

## CLAIMS

What is claimed is:

1 1. A computerized method for encoding an instance document representing a content  
2 description, the method comprising:  
3 determining a context node in the content description;  
4 obtaining a schema associated with the context node, the schema defining the  
5 required attributes, optional attributes, required elements, and optional elements for the  
6 context node, with the optional attributes and optional elements having an order;  
7 creating a required attributes section containing a value for each required attribute  
8 for the context node;  
9 creating an optional attributes section containing a value for each optional attribute  
10 for the context node that appears in the content description and further containing a header;  
11 creating a required elements section containing a value for each required element  
12 for the context node; and  
13 creating an optional elements section containing a value for each optional element  
14 for the context node that appears in the content description and further containing a header.

1  
1 2. The computerized method of claim 1, wherein creating the optional attributes  
2 section comprises:  
3 including a mask in the header of the optional attributes, the mask indicating which  
4 of the optional attributes defined in the schema are present in the content.

1  
1 3. The computerized method of claim 2, wherein creating the optional attributes  
2 section further comprises:  
3 including an order field in the header of the optional attributes section, the order  
4 field indicating the optional attributes present in the content correspond to the order of the  
5 optional attributes in the schema.

1 4. The computerized method of claim 1, wherein creating the optional attributes  
2 section comprises:

3 including an order field in the header of the optional attributes section, the order  
4 field indicating that the optional attributes present in the content do not correspond to the  
5 order of the optional attributes in the schema;

6 including a number field in the header of the optional attributes section, the number  
7 field indicating a count of the optional attributes present in the content description; and  
8 associating an attribute identifier with the value of each optional attribute present  
9 in the content description.

1 5. The computerized method of claim 1, wherein creating the required elements  
2 section comprises:

3 associating an element identifier with the value for a required element if the  
4 schema defines a choice of values for the corresponding required element.

1 6. The computerized method of claim 1, wherein creating the required elements  
2 section comprises

3 including a terminator field for a required element in the required elements section  
4 if the schema defines the corresponding required element as an unbounded sequence.

1 7. The computerized method of claim 1, wherein creating the optional elements  
2 section comprises:

3 including a mask in the header of the optional elements, the mask indicating which  
4 of the optional elements defined in the schema are present in the content description.

1 8. The computerized method of claim 7, wherein creating the optional elements  
2 section further comprises:

including an order field in the header of the optional elements section, the order field indicating the optional elements present in the content description correspond to the order of the optional elements in the schema.

9. The computerized method of claim 7, wherein creating the optional elements section further comprises:

associating a repeat field with the value of an optional element if the schema defines the corresponding optional element as having multiple occurrences.

10. The computerized method of claim 1, wherein creating the optional elements section comprises:

including an order field in the header of the optional elements section, the order field indicating that the optional elements present in the content do not correspond to the order of the optional elements in the schema;

including a number field in the header of the optional elements section, the number field indicating a count of the optional elements present in the content description; and

associating an element identifier with the value of each optional element present in the content description.

11. The computerized method of claim 10, wherein creating the optional elements section further comprises:

associating a repeat field with each value of an optional element if the schema defines the corresponding optional element as having multiple occurrences; and

associating the element identifier with only one value of the optional element if the schema defines the corresponding optional element as having multiple occurrences.

12. The computerized method of claim 1, wherein creating the required attributes section comprises:



1 18. The computerized method of 1 further comprising:  
2 creating a reset field, the reset field specifying a different context in the content  
3 description.

1

TO: 080398.P434